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| 10/802,984 | 03/17/2004 | Donald R. Van Der Moere | D5270 | 3898 |

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| EXAMINER |
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GARCIA, ERNESTO

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| ART UNIT | PAPER NUMBER |
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3679

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,984

Applicant(s)

VAN DER MOERE ET AL.

Examiner

Ernesto Garcia

Art Unit

3679

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8,10-15 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,10-15 and 17-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/08/2006 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 3-8, and 10-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains

subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 8, and 15, the recitation "at least a portion of the exterior margin being coated with a chromium-nitride coating" in claims 1 and 8, lines 2-3, and claim 15, lines 3-4, has no support in the disclosure. According to the drawings, the entire exterior margin is coated with a chromium-nitride. Further, the specification, in particular paragraph 019, originally indicated that the exterior margin is the coated chromium-nitride. There is no evidence that only a portion of the exterior margin is coated. Further, the recitations "bearinglessly shiftably matable" in claim 1, line 4, and claim 8, line 5, and "bearinglessly mating" in claim 15, line 8, does not find support in disclosure. According to the original specification, support exist for "shiftably matable" on paragraph 001 and on paragraph 008; however, there is no modifier that indicates that mating or that being matable is "bearinglessly" or "bearingless". According to the drawings, the coated exterior, in particular the chromium-nitride coating is bearing inside the bore.

Regarding claims 3-7, the claims depend from claim 1 and therefore do not comply with the written requirement.

Regarding claims 10-14, the claims depend from claim 8 and therefore do not comply with the written requirement.

Regarding claims 17-21, the claims depend from claim 15 and therefore are indefinite.

Claims 1 and 3-8, and 10-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 8, and 15, the recitation "bearinglessly" in claim 1, line 4, and claim 8, line 5, and in claim 15, line 8, is unclear. How can the coated portion of the exterior margin be not bearing matable with an inside margin of a pin bore, when the coated portion is actually sliding or bearing on the inside margin of the pin bore.

Regarding claims 3-7, the claims depend from claim 1 and therefore do not comply with the written requirement.

Regarding claims 10-14, the claims depend from claim 8 and therefore do not comply with the written requirement.

Regarding claims 17-21, the claims depend from claim 15 and therefore are indefinite.

Claim Rejections - 35 USC § 102

Claims 1, 3, 4, 6, and 7, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 1, Komuro et al. disclose, in Figure 3, a piston pin comprising a cylindrical exterior margin **13**. At least a portion of the exterior margin has a chromium-nitride (Cr-N) coating (col. 7, lines 47-50). Applicants should note that the exterior margin is shiftably able to mate with an inside margin of a pin bore of an appropriately sized connecting rod. Further, applicant should note that the language of the claims reads on the prior art structure.

Regarding claim 3, applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by physical vapor deposition, is of little consequence when Komuro possesses such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 4, the chromium-nitride coating was deposited to a depth of between 1 and 10 microns (col. 2, line 40).

Regarding claim 6, the coating is buffed. Applicant should note that the roller fatigue test apparatus inherently buffs the material until the coating peels off.

Regarding claim 7, the coating is buffed. Applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether process steps are recited. Accordingly, how the coating is buffed, e.g., in a centerless buffing operation, is of little consequence when Komuro possesses such a buffed coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Claim Rejections - 35 USC § 103

Claim 5 is rejected under 35 U.S.C. 103(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 5, Komuro et al. disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. does not disclose "substantially 5 microns". Applicants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on "substantially 5 microns". Therefore, as taught by Komuro et al., it would have been

obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 8, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558.

Regarding claim 8, McKone discloses, in Figure 6, a combination of a piston pin **17** and a connecting rod **18**. The piston pin **17** has an exterior margin. The pin bore and the piston pin are mating. The mating is a shiftable surface-to-surface engagement.

However, McKone fails to disclose at least a portion of the exterior margin having a coating being comprised of chromium-nitride. Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard nitride of the metals in the third to six group of the periodic table to produce a sliding bearing layer (col. 2, lines 45-50). Applicants should note that Chromium (Cr) is in the sixth group of the periodic table and chromium-nitride falls within the description as a layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the piston pin of McKone with a coating of chromium-nitride to provide a sliding bearing layer. Given the modification, the coating is a chromium-nitride coating disposed on the tubular body.

Regarding claim 10, applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by physical vapor deposition, is of little consequence when McKone as modified by Kochendorfer et al. possesses such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 15, McKone discloses, in Figure 6, a method comprising:
forming a piston pin body 17 having an exterior margin;
forming an inside surface margin of a connecting rod pin bore of a certain material employed in forming a connecting rod 18; and,
mating the exterior margin of the tubular body 17 with the inside surface margin of the pin bore in a shiftable a surface-to-surface engagement. However, McKone fails to coat at least a portion of the exterior margin with a chromium-nitride material.

Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard nitride of the metals in the third to six group of the periodic table to produce a sliding bearing layer (col. 2, lines 45-50). Applicants should note that Chromium (Cr) is in the sixth group of the periodic table and chromium-nitride falls within the description as a layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the exterior margin of McKone with a coating of chromium-nitride to provide a sliding bearing layer.

Claims 10-12 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, as applied to claims 8-10, 15, and 16, and further in view of Komuro et al., 5,851,659.

Regarding claims 10 and 17, McKone as modified by Kochendorfer et al., fail to deposit the chromium-nitride coating by physical vapor deposition. Komuro et al. teach depositing chromium-nitride coating through physical vapor deposition as an ion plating process to provide resistance to peeling, abrasion and baking (see Abstract). Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating by physical vapor deposition to provide resistance to peeling, abrasion, and baking.

Regarding claims 11 and 18, McKone as modified by Kochendorfer et al., fail to disclose to deposit the chromium-nitride coating to a depth of between 1 and 10 microns. Komuro et al. teach a chromium-nitride coating deposited to a depth of between 1 and 80 microns (col. 2, line 40) as part of a design consideration of a sliding surface. The range of 1 and 10 microns falls within this disclosed range. Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating to a depth of

between 1 and 10 microns as determined through routine experimentation and optimization.

Regarding claims 12 and 19, McKone, as modified by Kochendorfer et al. and Komuro et al., disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. does not disclose "substantially 5 microns". Applicants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on "substantially 5 microns". Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, and Komuro et al., 5,851,659, as applied to claims 10-12 and 17-19, and further in view of Fukutome et al., 5,601,293.

Regarding claims 13 and 20, McKone, as modified above, fails to disclose buffing the chromium-nitride after deposition. Fukutome et al. suggest treating the surface roughness of a chromium-nitride coating to resist wear (col. 7, line 18-21) as evidenced by the results. Therefore, as taught by Fukutome et al., it would have been obvious to

one of ordinary skill in the art at the time the invention was made to buff the chromium-nitride after deposition to treat the surface roughness to resist wear.

Claims 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, Komuro et al., 5,851,659, and Fukutome et al., 5,601,293, as applied to claims 13 and 20 above, and further in view of Wakefield, 3,757,378.

Regarding claim 21, as modified above, Fukutome et al. fail to disclose the buffing operation used. Wakefield teaches a centerless buffing operation to polish components. Therefore, as taught by Wakefield, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a centerless buffing operation to buff the coating of chromium-nitride.

Response to Arguments

Applicant's arguments filed 3/08/2006 have been fully considered but they are not persuasive.

With respect to Komuro et al., applicants argue that the test piece 13 of Komuro et al. is the only portion, which has a treated surface and is not taught to be bearinglessly shiftably matable with a connecting rod. In response, this argument is not

persuasive. Applicants have not shown why the test piece cannot be bearinglessly shiftably matable with a connecting rod. Applicants argue that the test piece of Komuro et al. is inherently unsuitable for use as a piston pin and that a piston pin necessarily has a cylindrical surface of constant diameter in order to facilitate insertion in the pin bores of the piston skirt. This argument is not persuasive when Komuro et al. just as well teach a cylindrical surface of constant diameter. Further, according to the claimed invention, the structure of Komuro et al. is identical, thus the test piece of Komuro et al. inherently is able to bearinglessly shiftably mate with a connecting rod.

Applicants' arguments with respect to claims 8-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. In particular the new limitations, "at least a portion of the exterior margin" in claims 1 and 8, lines 2-3, and claim 15, line 3, and "bearinglessly" in claim 1, line 4, claim 8, line 5, and claim 15, line 8, necessitated the new grounds of rejection.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the

application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-7083. The examiner can normally be reached from 9:30-5:30. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EL.

E.G.

March 20, 2006



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